

**WHAT IS CLAIMED IS:**

1. A mechanism for rotating at least a first and a second housing element of a device with respect to one another, where the first and second housing elements have a common axis of rotation, which is substantially perpendicular to a front surface of the device, the first housing element having a rounded surface which extends at least partly around said axis of rotation, said mechanism comprising:
  - a wheel having a rounded outer edge for engaging the rounded surface of said first housing element, said wheel being coupled to said second housing element at a center point about which the wheel is adapted to rotate, said wheel additionally having a contact point offset from said center point;
  - a tension device having a relatively fixed end and a relatively free end, said tension device being adapted for supplying a force when said tension device is preloaded; and
  - a linkage coupled between the free end of the tension device and the offset contact point of the wheel for biasing the wheel toward rotation.
2. A mechanism in accordance with claim 1 wherein said tension device includes a spring.
3. A mechanism in accordance with claim 2 wherein said spring is a torsion spring.
4. A mechanism in accordance with claim 1 wherein said linkage is a slider plate having a contact edge surface for engaging the contact point of said wheel, and an opposite edge surface for engaging the free end of said tension device.
5. A mechanism in accordance with claim 4 wherein said contact edge surface has a "V"-shaped profile including a point at the base of the "V"-shape and a pair of upraised arms angled at a slope.

6. A mechanism in accordance with claim 5 wherein the contact point of said wheel is biased toward a rotationally stopped position at the point at the base of the “V”-shaped profile.
- 5 7. A mechanism in accordance with claim 6 wherein the angled slope of at least one of the pair of upraised arms of the “V”-shaped profile increases near the point at the base of the “V”-shape.
8. A mechanism in accordance with claim 1 wherein said linkage is a crankshaft  
10 having a first end coupled to the contact point of said wheel, and a second end coupled to the free end of said tension device.
9. A mechanism in accordance with claim 8 wherein said second end of said crankshaft includes a pin which is adapted to engage and run along a channel located  
15 in said second housing.
10. A mechanism in accordance with claim 1 wherein said wheel is a flat gear.
11. A mechanism in accordance with claim 10 wherein said rounded outer edge of  
20 said flat gear includes teeth, which are adapted to engage corresponding teeth located along the rounded surface of said first housing element.
12. A mechanism in accordance with claim 1 wherein said device is a hand-held device.  
25
13. A mechanism in accordance with claim 1 wherein said device is an electronic device.
14. A mechanism in accordance with claim 13 wherein said electronic device is a  
30 wireless communication device.

15. A method of opening a first and a second housing element of a hand-held device using a self-opening mechanism comprising:

manually initiating rotation of one of the first and second housing elements with respect to the other one of the first and second housing elements along a  
5 common axis of rotation, which is substantially perpendicular to a front surface of the device, in at least one of a clockwise and a counter-clockwise direction;

completing the rotation of the first and second housing elements, automatically, between a substantially closed position and a substantially opened position, by a rotation mechanism incorporated as part of the hand-held device.

10

16. A method in accordance with claim 15, wherein completing the rotation of the first and second housing elements includes rotating the first and second housing elements substantially one hundred and eighty degrees with respect to one another from the position of the two housing elements prior to manually initiating rotation.

15

17. A method in accordance with claim 15, wherein completing the rotation of the first and second housing elements includes:

applying a force to a linkage by a preloaded tension device;

transferring the force along the linkage to an off-center contact point of a  
20 wheel, which is coupled to the second housing element, thereby inducing a rotation in the wheel;

rotating the wheel, along a curved surface of the first housing element.

18. A method in accordance with claim 17, wherein completing the rotation of the  
25 first and second housing elements further includes applying an additional force supplied by a leftover preload of the tension device for maintaining the first and second housing elements in a rotatably opened position.

19. A method in accordance with claim 15, wherein the device is capable of  
30 opening in both a clockwise and a counter-clockwise direction, and when the rotation

is manually initiated in either a clockwise or a counter-clockwise direction, the rotation is completed in the same direction that the rotation was manually initiated.

20. A method in accordance with claim 15, further comprising returning the first  
5 and second housing elements to a non-rotated position, wherein returning to a non-rotated position results in the preloading of a tension device.

21. A method in accordance with claim 20, wherein the first and second housing  
elements are manually returned to a non-rotated position in a direction counter to the  
10 direction of rotation during the opening of the first and second housing elements.

22. A device comprising:  
a first housing element;  
a second housing element; and  
15 a self-operating mechanism coupled to said first housing element and said second housing element for rotating the first and second housing elements with respect to one another along a common axis of rotation, which is substantially perpendicular to a front surface of the device.

20 23. A device in accordance with claim 22, wherein said device is a wireless communication device.

24. A device in accordance with claim 23, wherein said first housing element is a  
body including electronic components and said second housing element is a cover.  
25

25. A device in accordance with claim 24, wherein said body includes a keypad.

26. A device in accordance with claim 24, wherein said body includes a  
microphone and said cover includes a speaker.  
30

27 A device in accordance with claim 22, wherein said first housing element has a rounded surface, which extends at least partly around said common axis of rotation, and wherein said self-operating mechanism for rotating the first and second housing elements includes;

- 5 a wheel having a rounded outer edge for engaging the rounded surface of said first housing element, said wheel being coupled to said second housing element at a center point about which the wheel is adapted to rotate, said wheel additionally having a contact point offset from said center point,
- a tension device having a relatively fixed end and a relatively free end,
- 10 said tension device being adapted for supplying a force when said tension device is preloaded, and
- a linkage coupled between the free end of the tension device and the offset contact point of the wheel for biasing the wheel toward rotation.

15 28. A device in accordance with claim 27, wherein said device further includes a retainer plate coupled to said second housing element for forming a space therebetween within which the wheel, the tension device and the linkage is located.

29. A device in accordance with claim 27 wherein said tension device includes a spring.

20

30. A device in accordance with claim 29 wherein said spring is a torsion spring.

31. A device in accordance with claim 27 wherein said linkage is a slider plate

25 having a contact edge surface for engaging the contact point of said wheel, and an opposite edge surface for engaging the free end of said tension device.

32. A device in accordance with claim 31 wherein said contact edge surface has a “V”-shaped profile including a point at the base of the “V”-shape and a pair of

30 upraised arms angled at a slope.

33. A device in accordance with claim 32 wherein the contact point of said wheel is biased toward a rotationally stopped position at the point at the base of the "V"-shaped profile.

5 34. A device in accordance with claim 33 wherein the angled slope of at least one of the pair of upraised arms of the "V"-shaped profile increases near the point at the base of the "V"-shape.

35. A device in accordance with claim 27 wherein said linkage is a crankshaft  
10 having a first end coupled to the contact point of said wheel, and a second end coupled to the free end of said tension device.

36. A device in accordance with claim 35 wherein said second end of said crankshaft includes a pin which is adapted to engage and run along a channel located  
15 in said second housing.

37. A device in accordance with claim 35 wherein said device further includes a retainer plate coupled to said second housing element for forming a space therebetween within which the wheel, the tension device and the crank shaft is  
20 located, and wherein said second end of said crank shaft includes a pin which is adapted to engage and run along a channel formed as part of said retainer plate.

38. A device in accordance with claim 27 wherein said wheel is a flat gear.

25 39. A device in accordance with claim 38 wherein said rounded outer edge of said flat gear includes teeth, which are adapted to engage corresponding teeth located along the rounded surface of said first housing element.